

ENTERPRISE RESOURCE PLANNING: COMPARISON IMPLEMENTATION PROCEDURES OF TWO COMPANIES

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Abstract

Advanced information technologies became absolutely necessary part of the companies in today's competition and velocity environment. The emergence of new information technologies is rapidly changing. One of the new information technologies is Enterprise Resource Planning (ERP) system. Companies adapt Enterprise Resource Planning because they want to decrease cost and increase the quality of their product and services. They also try to adapt their processes to more customer-oriented approach and effective customer reaction. The study aims to find out how adopt Enterprise Resource Planning implementation procedures is applied by two companies in Eskisehir province. Also, it identifies success factors, software selection steps, and implementation procedures critical to a successful implementation.

Key Words: *Enterprise Resource Planning, Material Resource Planning, Enterprise Resource Planning Software, Critical success factors, Implementation procedures.*

1. Introduction

The environment of business changes so rapidly. Companies face of increasing competition, expanding markets, and rising customer expectations. This puts pressure on companies to lower costs, expand product choice, provide better customer service, improve quality, and coordinate demand, supply, and production (Shankarnarayanan, 2000).

In competition environment businesses upgrade their capabilities, to stand competitive; must improve their own business practices and procedures. Therefore, businesses begin to implement enterprise resource planning (ERP) systems (Ptak, Schragenheim, 2000).

ERP contains businesses all functions and departments; and all business transactions are entered, recorded, processed, monitored, and reported. This provides departmental cooperation and coordination. But it enables companies to achieve their objectives of increased communication and responsiveness to all stakeholders (Dillon, 1999).

2. ERP

1960's inventory control was important part of businesses. Businesses tried to keep inventory, to satisfy customer demand and stay in competitive. Most software packages were designed to handle inventory based on traditional inventory concepts (Ptak, Schragenheim, 2000).

In the 1970's, it businesses could not consign of inventories. This led businesses to use material requirements planning (MRP) systems. MRP represented materials planning process

which is bill of material files that identified the specific materials needed to produce each finished item, a computer could be used to calculate gross material requirements (Ptak, Schragenheim,2000)..

In the 1980's, companies began to take advantage of the increased power and affordability of available technology. Manufacturing resources planning (MRP II) systems evolved to the financial accounting system and the financial management system along with the manufacturing and materials management systems. This system makes businesses to have a more integrated business system that derived the material and capacity requirements associated with a desired operations plan, allowed input of detailed activities, translated all this to a financial statement, and suggested a course of action to address those items that were not in balance with the desired plan (Ptak, Schragenheim,2000).

By the early 1990's, MRP II began to be expanded to incorporate all resource planning for the entire businesses. ERP can be used not only in manufacturing companies, but in any company that wants to enhance competitiveness by most effectively using all its assets, including information (Shankarnarayanan, 2000).

3. ERP implementation process

Enterprise systems software packages undertake integration of all information about financial and accounting information, human resource information, supply chain information, and customer information.

Implementation of ERP systems needs investment and time. Not only do ERP systems take a lot of time and money to implement, they can disrupt a company's culture, create extensive training requirements, and even lead to productivity and mistreat customer orders, at least in the short term, can damage the bottom line (Stein, 1999).

4. Procedures of ERP implementation

Implementing an ERP system is an expensive and risky. In fact, 65% of executives believe that ERP systems have at least a moderate chance of hurting their businesses because of the potential for implementation problems (Cliffe, 1999). Numerous authors have identified a variety of factors that can be considered to be procedures of an ERP implementation. These are described below (Sousa and Collado, 2000).

4.1. Strategic Aims

ERP implementations require that key people throughout the organization create a clear, compelling vision of how the company should operate in order to satisfy customers, empower employees, and facilitate suppliers for the next years (Latamore,1999). There must also be clear definitions of goals, expectations, and deliverables. Finally, the organization must carefully define why the ERP system is being implemented and what critical business needs the system will address (Travis,1999).

4.2. Top management Support

Successful implementations require strong leadership, commitment, and participation by top management (Holland et all, 1999). Since executive level input is critical when analyzing and rethinking existing business processes, the implementation project should have an executive management planning committee that is committed to enterprise integration, understands ERP, fully supports the costs, demands payback, and champions the project. (Akkermans and Helden, 2002).

4.3. Project management

Successful ERP implementation requires that the organization engage in excellent project management. This includes a clear definition of objectives, development of both a work plan and a resource plan, and careful tracking of project progress (Akkermans and Helden, 2002). And the project plan should establish aggressive, but achievable, schedules that instill and maintain a sense of urgency (Laughlin, 1999). The project and should identify the modules selected for implementation as well as the affected business processes. If management decides to implement a standardized ERP package without major modifications, this will minimize the need to customize the basic ERP code. This, in turn, will reduce project complexity and help keep the implementation on schedule (Axam and Jerome, 2003).

4.4. Change management

The existing organizational structure in most companies is not compatible with the structure, tools, and types of information provided by ERP systems. ERP system imposes its own logic on a company's strategy, organization, and culture. Thus, implementing an ERP system may force the reengineering of key business processes and/or developing new business processes to support the organization's goals (Bernroider and Koch, 2000) The changes may significantly affect organizational structures, policies, processes, and employees.

If people are not properly prepared for the imminent changes, then denial, resistance, and chaos will be predictable consequences of the changes created by the implementation. However, if proper change management techniques are utilized, the company should be prepared to embrace the opportunities provided by the new ERP system—and ERP will make available more information and make attainable more improvements than at first seemed possible. The organization must be flexible enough to take full advantage of these opportunities (Chang, 2004).

4.5. Implementation team

ERP implementation teams should be composed of people who are chosen for their skills, past accomplishments, reputation, and flexibility. These people should be entrusted with critical decision making responsibility (Daneva, 2003). Management should constantly communicate with the team, but should also enable empowered, rapid decision making (Chang, 2004).

The implementation team is important because it is responsible for creating the initial, detailed project plan or overall schedule for the entire project.

4.7. Education and training

Education/training is probably the most important critical success factor, because user understanding and buy the system. ERP implementation requires of knowledge to enable people to solve problems the system. If the employees do not understand how a system works, they will invent their own processes using those parts of the system they are able to manipulate (Laughlin, 1999).

5. ERP system selection

A Business that implements ERP has to accept the vendor's basic necessities about the business and change existing processes and procedures. Therefore, each business should try to select and implement a system that underscores its unique competitive strengths, while helping to overcome competitive weaknesses (Laughlin, 1999).

The company must identify its critical business needs and the desired features and characteristics of the selected system. Literature includes some recommended steps and suggestions for the selection process (Hong and Kim, 2001).

1. *Vision*: Define the corporate mission, objectives, and strategy. Use cross-functional teams and executive-level input to identify, examine, and rethink existing business processes. Once the vision is approved by top management, broadcast the vision to the entire company.
2. *Create a feature list*: A team composed of respected individuals who are familiar with the various software packages, company processes, and the industry should be responsible for identifying the features and functions required for the software to effectively support each functional area as well as the overall company vision.
3. *Software candidate*. The field may be narrowed based on criteria such as the size of the enterprise or industry type. Select only ERP providers that are right for the business. Business should analyze ERP system strengths and weaknesses of each supplier.
4. *Demonstration of ERP packages*. In order to provide a thorough critique, all key members of the selection team should be present for all demonstrations.
5. *Selecting ERP System*: When companies select their system, price is frequently a major factor. But it is critical not to underemphasize other important criteria such as supplier support, ease of implementation, closeness of fit to the company's business, flexibility when the company's business changes, technological risk, and value (total implemented cost versus total value to the company).

6. Research Methodology

This research was conducted using case study approach in order to have exploratory research on experienced success of ERP projects and implementation procedures positively or negatively affect the implementation projects. Exploratory research is defined as research type that has emphasis on the discovery of ideas and insights (Churchill, 1995).

In Case Studies, interviews are held with managers who have decided to implement ERP system of sample organizations, key users who involved in implementation projects, end users who use ERP packages in their daily business process and consultants and projects managers of ERP supplier who involved in ERP project implementation. Open-ended nature of interview questions helped to catch participant insights about the projects.

The name of the organizations and respondents are not revealed because of the confidentiality. Although it appears as it is an obstacle for research, this guaranteed the accuracy of information gathered through interviews with respondents.

This case study is a comparison of their implementation, including an indication of the degree to which they adhered to system selection guidelines, and implementation procedures described in the first part of this paper.

6.1. Brief history of Organizations

Organization A is a private organization that operates in the textile sector with their more than 500 employees and 4 factories in the different areas of Turkey. They are supplying the knitting, weaving and carpet industries with the finished primarily made of acrylic and wool in addition to various types of natural, artificial and synthetic raw material. The annual output is about 30.000 tons. This organization has been successfully promoting its trademark in local and international markets since 1970s.

Organization B is a private manufacturing organization that produces consumers' goods in food sector. It has different facilities in Turkey with more than 500 workers. The organization began to produce in 1968 and develops its production facilities and capacity since then. The Organization B's sales network includes 15 branch offices, 26 main distributors and 22 secondary distributors throughout country. It currently exports many countries including China, Hong Kong, Saudi Arabia, and Macedonia.

6.2. Strategic Aims

The business environment was rapidly changing to encourage more intimate business-to-business transactions with key customers, and the old system was not compatible with the newer systems that were being installed in the customer base. Future enhancements to the existing system were not expected, and Organization A and B, did not want to maintain in-house information system resources to develop the new capabilities and interfaces that would be required.

6.3. Top management support

Organization A realized that top management support is not effective at the stage of the project implementation; also it is not important for on going success of the system after the project completed. Project Manager states that the non-supportive behavior of the top management always puts project's unsuccessful.

In Organization B, the ERP system is highly supported by top management. This reinforcement of top management affected process success positively. Although project team felt this as pressure, this pressure made this project success real. They still believe that top management had given more support to project.

6.4. Project management

In Organization A, the execution strategy and implementation plan of the project was not well defined and made clear to all stakeholders. Project did not have clearly established goals to be met in line with the organizational strategic goals. The project manager says that the project scope was not realistic. The project's milestones were underlined informally, which affects the project success negatively. The project team consists of about five key users which have moderate qualifications to be a part of this kind of project according to Project Manager. They know their job well but they had not been in this kind of an important project before. Nevertheless, they are the best fit ones with in the organization. Another negative impact is the changes in project team composition with depart of two people during the project implementation period affects the project negatively.

In Organization B, the implementation plan of the project and execution strategy was well defined. It was also made clear to all stakeholders. There were clearly established project goals to be accomplished in line with the organizational strategic goals. They believe that the project scope was realistic. They used formal plan to define project's milestones and revised it when necessary. Project team was composed of key users from different departments relatively for ERP module needs. There were many consultants to work with. These key users knew their job well and worked with consultants effectively to design future processes of business. They were aware of their responsibilities and duties about project. There were not any changes in the project team composition during project.

6.5. Change Management

Organization A inadequately managed the change process. They did not take into account employee satisfaction with the new system. Top management was unable to impose to the employees their vision for change. Most employees did not understand the need for change. The process of change was not well managed. In the project, they face with user resistance to new system especially during redefinition of the business processes and the delegation and reassignment of work between departments. This resistance mostly comes into sight because of the massive change and rearrangement of duties with the new business procedures. Most of the project team members agree that this change was not managed properly. There might be many reasons for this. There was the limited time and resources mostly allocated to project for more technical and functional issues. Some team members state that this opportunity to change might have been used more effectively.

In Organization B, the project, they face high user resistance to new system. They use many methods to cope with this situation. They use different methods to convince people the

benefits of the system and make the acceptance of the system guaranteed. Preparing detailed procedures of new business processes, they tried to not to have any confusion anymore. Therefore, they realized project as not only an information technology project but also as a chance to bring change into their organization to make improvements on business processes.

6.6. The implementation team

In Organization A, the implementation team was selected from all functional disciplines. Twelve capable and knowledgeable people were selected. For some team members, a full-time commitment was added to their continuing daily duties and responsibilities. A better approach would have been to assign six multi-discipline individuals committed full time to the project. Additional expertise could have been attained as needed through interviews and temporary assignments to the project team.

Organization B has a project team which was the conference room pilot. A cross-section of products, processes, customers, and various scenarios were created and tested. Several new processes were evaluated and accepted or rejected. One particularly rigorous test was a series of complete order-to-cash process flows, where the transaction values were manually calculated in advance and the system results validated for accuracy and completeness. The conference room pilot was one place where the pressures of team members' daily responsibilities adversely impacted the quality of the project. In those functional areas that were represented by project team members that had sufficient time available to explore alternate process strategies during the conference room pilot, significant improvements were generated. But in those functional areas represented by team members that had inadequate time to dedicate to the pilot, the typical result was a substandard replication of the old legacy system processes.

6.7. Education and training

In the Organization A, project, necessary time and resources were allocated for training. The training program is conducted in two parts as the used methodology requires. First, consultants trained key users and then key users trained employees. However, project team members were mostly dissatisfied with training because of the time allocated. They think that more time would have been assigned to training. According to a member who is the manager of Information Technology department, timing of trainings makes confusions. Trainings were done after the definition phase so it was hard for project team to comprehend the program.

In Organization B, training was part of this project and handled successfully for the project team. The training program is conducted in two parts; first training of key users by consultants and second training of the employees by key users. For the consultants' point of view necessary time and effort were allocated to trainings. They claim that they comply with their standard training procedures. However, project manager states that they are not satisfied with the training because of two reasons: trainings might have been not satisfactory or the key users were not aware of the importance of these trainings. Another issue is the dissatisfaction of the employees with trainings given by key users.

CONCLUSION

ERP systems assure business process improvements and decrease in costs by functionalities of accurate and timely information, elimination of inventory and delivery problems, accurate customer and supplier base, operational linkage with multiple period accounting, multiple currency, enhanced supply-demand linkage and reporting simplicity and affectivity.

These project cases mainly show how ERP system implementations and integrations realized in Turkey. ERP systems are preferred specifically since they promise structured

business models and best practices. They are used as a tool to standardize business procedures and business flows, rather than the real ERP benefits considerations.

Organization B case study demonstrate successful ERP implementations in the sense of completing within the arranged time, allocated budget and fulfilling the expectations with accordingly. Procedures of ERP systems affect project success explicitly and implicitly of it.

Top management support plays essential role in projects; both in realization of project goals and keeping the live system alive effectively. It's the most important factor for employees to dedicate themselves to project. The ERP projects, requiring main changes in business practices, somehow disturbing normal way of doing daily operations, requiring qualified and trainable human resource, brings fear of losing jobs for employees. To cope with this kind of difficulties and make the acceptance of system certain, top management support is necessary. It is a must for a project to guarantee overall organizational commitment and proceed the critical adaptation process successfully. The Organization A case illustrates how lack of top management support risky system even though a successful project is accomplished.

Training is so important in implementation process. Mandatory training takes part in all of these case projects. Nevertheless, these are usually realized as insufficient by project team members. One of the observed weaknesses of trainings is the absence of top management. Still they provide support for projects; they usually are the last people in organization to gain knowledge of system. All these project participants are not satisfied with training. Therefore, this shows the necessity of training approach, methods or quality to be discussed. There should be some improvements in quality or time of training

The project plans cover training and one or two-day module trainings, which take about 10 days in total, are arranged for group of key users. However, it seems that training is one of the hard areas of project because consultants and employers from two organizations claim their displeasure about trainings. Mainly budgetary effects have influence on training duration. In Turkish economic and business environmental conditions, projects are carried out with limited budgets and human resources. This reality shows its impact on total project process and usage of consultants. However, the quality of trainings and the knowledge process can be analyzed and improved for ERP projects.

Project managers are usually effective in change management. But it is change management which is not professionally held. Change management is the critical part of the project especially as project brings massive change in business operations. However, projects are not carried out as change projects. This results in change necessities and project goals to be misunderstood or underestimated by project team and overall organization. Realizing this situation, the project manager and top managers perform forceful behavior towards project team and employees. This usually illustrates how Turkish organizations and managers conduct change management. Indeed, change management should be taken into account with the concept of organizational culture. However, case projects show that change comes after project implementation with the authoritarian manners of management destroying all other alternatives for employees.

The project team composition has significant effect on redesign of operational procedures. It is important to work with people who have operation knowledge in order to make designed processes realistic and practical in actual business, not only on papers or deliverables. Taking into account that employees do not want to work much or have workload to have accurate system data, benefits of the system for both organization and employees should be made clear. The employees should realize this situation as win-win case.

Two different cases demonstrates that project team members do not have experiences on project work even though they are well experienced about their jobs. Their talent for information technology affect training period as well. In most of the projects technical

analysts are required to be trained internally or new experienced technical engineers are employed. Therefore, consultants play a critical role in project with their guidance both in technical and functional issues about the program and configuration of program to meet customer expectations. They, on the other hand, act as business analyst and redesign engineers to create newly business procedures. Consequently, their qualification and experience both in program training and business analysis is significant for project success.

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Two different cases demonstrates that project team members do not have experiences on project work even though they are well experienced about their jobs. Their talent for information technology affect training period as well. The customers' background knowledge of information technology is another criterion for effective team composition. In most of the projects technical analysts are required to be trained internally or new experienced technical engineers are employed. Therefore, consultants play a critical role in project with their guidance both in technical and functional issues about the program and configuration of program to meet customer expectations. They, on the other hand, act as business analyst and redesign engineers to create newly business procedures. Consequently, their qualification and experience both in program training and business analysis is significant for project success.

Decision process before choosing the right ERP package for implementation is important. This process should handle carefully before execution of project. It is clear that ERP packages can not cover all of the unique business requirements. However the success of project necessitates the best match package to be selected. The doubt about ERP package brings problems for project implementation procedures.

Most importantly, ERP systems should be considered as live systems which can be improved and changed after time with the requirements of real operations. Realization of this makes system ongoing success persistent as system develops overtime.

Further research on project assessment is necessary for contribution to ERP concept. Many implementation projects are being conducted but there is lack in the post-implementation reviews. Projects are not assessed and project failures can not be identified. Furthermore, most of the large-size organizations in Turkey have already implemented ERP systems. Therefore, ERP systems for medium-size organizations, these organizations' requirements and changes that they bring into ERP market could be analyzed.

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